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Researches on Fungi. Vol. III, The Production and Liberation of Spores in Hymenomycetes and Uredineae. By A. H. REGINALD BULLER. Longmans, Green and Co., 1924. pp. 611.

THIS is the third volume of Buller's "Researches on Fungi," and at least one more is promised. It takes an ambitious, resourceful and trained scientist to turn out, as a side issue to teaching, work of the character of these books. The latest volume contains 611 pages of descriptive matter, including the table of contents and general index, and is illustrated with two hundred and twenty-seven drawings and photographs about equally numerous. The text includes not only observations made by the writer and his pupils, but also reference to work of previous investigators.

The book is divided into two parts of which Part I is by far the larger. This deals in the first eleven chapters with a technical discussion of the production and liberation of the spores in the Hymenomycetes; chapter XII treats of luminescent fungi; chapter XIII, with parasitic agarics; chapter XIV, with nocturnal spore discharge. Part II is concerned with the production and liberation of basidiospores in the Uredineae. A summary of each chapter at the end of the book gives the hurried reader a chance to grasp the main features of the work. The book is dedicated to the long and favorably known English mycologist, William P. Grove. Space does not permit a detailed outline of the work, but some general idea of the fungi dealt with can be seen by the following short summary.

The Psathyrella sub-type of mushrooms is illustrated chiefly by *Lepiota cepaestipes* which takes twenty-two pages of descriptive matter, while *Lepiota procera* occupies six more of the first chapter, and *Psathyrella disseminata* takes up the second chapter of thirty-one pages. Chapter III deals with the Bolbitius sub-type, chiefly *B. flavidus,* and a comparison with the fruiting body of the genus Coprinus. The IV chapter treats, in more or less detail, with *Armillaria mellea, Marasmius oreades, Amanita rubescens, Amanitopsis vaginata,* Collybia sps. (chiefly *C. radicata*), *Pluteus cervinus* and *Nolanea pascua.* Chapter V is short, dealing with another sub-type illustrated by Inocybe. Chapters VI to XI, comprising two hundred and thirty-nine pages, treat of the Coprinus like fungi of which details are given of *Psathyra urticaecola, Coprinus plicatilis, C. comatus, C. sterquilinus* (treated in detail), *C. atramentarius, C. stercorarius, C. picaceus, C. lagopus* and *C. micaceus.*

The remaining chapters of this first part deal with the toadstools from a different point of view. For example, chapter XII treats of bioluminescence, giving detailed observations made on *Panus stypticus* form *luminescens,* found in North America, the European representative of this species apparently being non-luminous. A list of eighteen luminescent mushrooms is given and short notes are included on other fungi, bacteria and animals in which this phenomenon has been observed. Chapter XIII deals with fungi parasitic on other fungi, details being given of those agarics found on other agaric species. The final chapter treats of the nocturnal spore discharge of species of Pleurotus and a method of detecting it by an electric hand-lamp.

Part II of the book is comparatively short, dealing with the Uredineae in three chapters. The first of these considers the phenomena of spore discharge as illustrated by species of Puccinia, Endophyllum and Gymnosporangium. Chapter II discusses the teleutospore and the curvature of its basidium in relation to the dispersal of the basidiospores, illustrated chiefly by the germination of *Puccinia malvacearum*. Chapter III concludes the work with a discussion of spore walls and the dispersal of spores by water and wind.

While on the whole these books of Buller's are of chief value to the mycologist, there is much of interest to the general student of nature. Manitoba seems very remote even to an American, yet when an English trained botanist makes it his home and turns out such stimulating and exact work, we realize more fully than ever that the man, rather than the environment, counts most.

G. P. C.